

REMARKS

The objection to the specification has been noted. It is respectfully requested that the Examiner point out where the specification is to be changed. The undersigned has searched and did not find the British spelling of "characterized."

The Official Action did not address claim 30. Please indicate the status of this claim.

Claims 16-20 and 23-24 were rejected as unpatentable over DELANS 4,983,475 in view of GB 1590947 and NANN et al. 4,760,001. Reconsideration and withdrawal of the rejection are respectfully requested.

Page 5 of the Official Action, last paragraph, states that rearranging the diagonal members of DELANS to be parallel would have been an obvious geometric alternative and optimization of the arrangement would have only required routine experimentation. However, battery design involves balancing many conflicting factors including the desired electrical characteristics of the battery, cost, weight, the space taken up by the battery (see column 2, lines 23-29 of DELANS), connection to other batteries (see DELANS at column 2, lines 31-34) and factors relating to battery durability such as plate growth (see DELANS at column 2, lines 42-54). Accordingly, rearranging the diagonal members of DELANS would require consideration of those factors and cannot be regarded as merely routine.

In the first three paragraphs of page 6 of the Official Action, it is suggested that the connector members of DELANS are diagonally arranged merely because the plate straps in the DELANS battery are disposed at opposed diagonal corners of the plate and that plate straps arranged "in parallel" are an obvious modification. However, that suggestion is not supported by DELANS itself which makes it clear that the diagonally arranged plate tabs are provided "in order to increase flow in opposite directions indicated by arrows E" in Figures 10A and 10B (column 3, lines 46-53 of DELANS), which aim clearly would not be achieved by provided the tabs at opposite ends of the same long side of the plates.

At column 7, line 54 to column 8, line 3 of DELANS, it is indicated that in order to practice the invention of DELANS, the plate of Figure 1 must be modified to add a bottom plate tab 45 opposite the upper plate tab, as shown in Figure 10A or, alternatively, to achieve the same result the plate of Figure 2 must be modified, **"by cutting off the bottom tab 24 located directly below the top tab 22"** (emphasis added). It is therefore clear that the diagonal disposition of the plate straps (which are in line with the plate tabs) is due to the arrangement of the diagonal connector members, rather than the arrangement of the diagonal connector members being due to the diagonal disposition of the plate straps, contrary to the suggestion in the first paragraph of page 7 of the Official Action.

Moreover, the diagonal arrangement of the connector bars is presented in DELANS (column 9, lines 10-27 and column 2, lines 42-54) as being essential to cope with the problem of plate growth. (It is noted that the Official Action does not deal with the remarks about plate growth made on page 12 of the reply dated October 27, 2003.) The diagonal arrangement of the connector members of DELANS is also required in order to achieve the election flow shown in Figures 10A and 10B of DELANS, in order to provide both the centrally disposed terminal posts shown in Figures 5-8 and the battery connectors shown in Figures 11 and 12, with the attendant benefits described at column 2, lines 23-41 of DELANS.

For all those reasons, the skilled person reading DELANS would recognize that the diagonal arrangement was essential to achieve the benefits described and would therefore not have found it obvious to use parallel plate straps in place of the diagonal plate straps of DELANS.

The Official Action states that GB '947 and NANN et al. disclose parallel terminal arrangements. GB '947 discloses a battery in which each battery plate has on each of its long vertical edges 6, tabs extending horizontally outwards to a vertical bar 5. In contrast to the battery of DELANS, the battery of GB '947 does not comprise plates having tabs on upper and lower edges or plate straps connecting those plate tabs. The skilled person would immediately recognize that to adapt the

battery of DELANS to include the vertical bars of GB '947 would require major modifications of the design going beyond the mere routine and would sacrifice many, if not all, of the benefits of diagonal bars mentioned in DELANS. For example, it would appear impossible for the bars of GB '947 to cope with plate growth in the way described in DELANS.

NANN et al. disclose a battery in which the negative electrodes each comprise two expanded copper grids and a copper strip arranged between them, the ends of the copper strip apparatus serving as plate tabs. However, as is clear from Figures 1 and 4 (which are plan views) and from Figure 5, the copper strips are preferably arranged to run horizontally and there are no connector members connecting the horizontally opposed bridges 35 (Figure 4). In fact, in relation to vertically arranged plates, it is stated that, "it is problematic to connect the connection lugs at the lower end of the plate grid to the top via connectors" (column 3, lines 24-25) and therefore NANN et al. teach away from using vertical connector bars. For those reasons, the skilled person would not recognize it as being obvious to modify DELANS in the light of NANN et al., especially Figure 4 of NANN et al. which as previously mentioned shows a plan view of a battery having horizontal plates.

In light of the above comments, further remarks in response to parts 5a and 5b of the Official Action do not appear necessary. Part 5c of the Official Action appears to indicate

that any shape of battery casing will do as long as it encases the battery, and it is within the ability of the skilled person to provide such a casing. However, that fails to take account of two points. Firstly, the consequent changes in the casing needed if the arrangement of the bars is changed increases the difficulty and cost of that change. Secondly, the clear teaching of DELANS that replacement of battery configurations having conventional top mounted posts with the diagonal bar arrangement of DELANS makes possible an increase in energy density and allows the length of connection to a neighboring battery to be minimized (see column 2, lines 23-35). It follows that changing the arrangement of the connector bars and the shape of the casing as proposed by the Examiner would result in the loss of those benefits. Those two reasons provide a further disincentive to modification of the DELANS battery by replacing the diagonal connector bars with parallel bars.

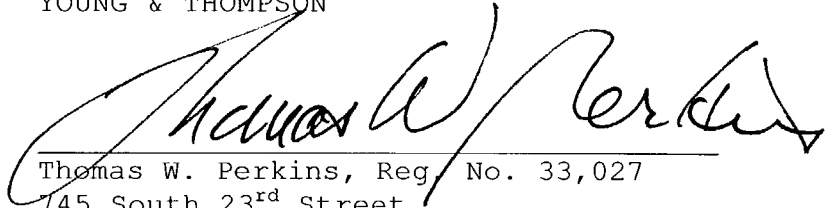
The remaining claims were rejected in view of further references (except claim 30 noted above). The further references have been carefully considered and do not make up for the shortcoming noted above. These claims are believed to be allowable for the reasons given.

In view of the foregoing remarks, it is believed that the present application is in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON



Thomas W. Perkins, Reg. No. 33,027  
745 South 23<sup>rd</sup> Street  
Arlington, VA 22202  
Telephone (703) 521-2297  
Telefax (703) 685-0573  
(703) 979-4709

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